



THE TEXAS THUNDERBOLT



National Weather Service - Fort Worth, TX
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Winter 2011

NWS Fort Worth Leadership Team

Meteorologist in Charge

Bill Bunting

Science and Operations Officer

Greg Patrick

Warning Coordination Meteorologist

Mark Fox

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Questions? Comments?

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Significant Weather Events of 2010

by Jennifer Dunn

The year started out with a winter many people will remember. After a white Christmas for some at the end of 2009, an arctic blast arrived on January 7th bringing some of the coldest air the region had seen in several years. Temperatures in the teens and single digits were observed the morning of the 9th, and a daily record low of 8 degrees was set in Waco.

The atmosphere quickly recovered behind the arctic air and on January 20th, five tornadoes struck north Texas; touching down in Hopkins, Van Zandt, and Henderson counties. Two tornadoes were rated EF2s, one was rated an EF1, and the remaining two received ratings of EF0. The most significant tornado on this day occurred in Van Zandt County. This EF2 tornado had a damage path length over 15 miles long as it tracked from near Canton to near the Silver Lake community. Over 150 homes sustained damage and a small church was destroyed in Starr. Maximum wind speeds with this tornado were estimated to be 110-120 mph.

In less than a month, the atmosphere did another complete turn around, and a his-

toric snowfall event occurred February 11th - 12th. The highest snowfall amounts fell along a



This 18 wheeler was blown into a warehouse building near the intersection of Mockingbird Lane and Irving Blvd during the Dallas tornado on September 8th. The truck was traveling on the road near the intersection at the time the tornado struck. Photo: National Weather Service Office in Fort Worth

line from Canton to the DFW Metroplex to southern Jack County. In this area, 12-14" of snow was common, and the highest snowfall total reported at one location was 14.4".

(Continued on Page 7...)

NWS Fort Worth is on Facebook!

On October 6th, 2010, the Fort Worth Weather Forecast Office (WFO) was the first National Weather Service WFO to have an official facebook page. The direct link to our facebook page is: www.facebook.com/US.NationalWeatherService.FortWorth.gov

Facebook users can also type in "National Weather Service Fort Worth" into the facebook page search bar to find our page.

Facebook offers us another way to communicate weather information to residents of North Texas and anyone else with an interest in our local area weather. Our office facebook page offers us the opportunity to provide specific details on upcoming weather events and directly interact with customers to add value or



clarification to the forecasts that we issue.

At this time the local facebook page remains in experimental mode and is being evaluated for implementation

at National Weather Service Offices all across the country. Because of high interest in the facebook page during this evaluation period the page has been an early success. As long as interest remains high in the page, it will likely remain operational as a valuable tool to communicate critical weather information to the public.

Three NWS Fort Worth Staff Receive Director's Awards

by William Bunting



WFO Fort Worth MIC Bill Bunting (L) with Ted Ryan (C) and Lance Bucklew, recipients of the Director's Award for Service Improvement

Three members of the Fort Worth Weather Forecast Office (WFO) staff received the Southern Region Director's Award for their work to enhance service to our customers. In a brief awards ceremony on November 2nd, Senior Forecaster Ted Ryan and Information Technology Officer Lance Bucklew received the Director's Award for Service Improvement for the development of a web-based Graphical Hazard Planner. The Hazard Planner depicts anticipated hazardous weather for the next 6 days on a county-level basis or provides a larger North Texas perspective, depending on the customer's area of concern. The underlying forecast information for the Hazard Planner comes from the Graphical Forecast Editor, which is the primary tool used to generate digital, graphical, and text-based forecasts. Working together and incorporating feedback during the design phase, Ted and Lance have developed a tool that is used daily by emergency managers and public safety officials to prepare for hazardous weather. Congratulations, Ted and Lance!

At the same awards ceremony, Warning Coordination Meteorologist Mark Fox received the Director's Award for Decision Support Services for his leadership in

expanding the office's support to public safety officials across North Texas. Working with several of the staff at WFO Fort Worth and emergency officials across North Texas, Mark led the effort to expand the on-site and remote decision support service capabilities to incident commanders and emergency managers. The variety of services includes on-site weather support at Emergency Operations Centers or command posts and live and recorded multi-media weather briefings prepared from the forecast office. As a result of Mark's efforts, WFO forecasters are better prepared to provide decision support to first responders before and during major events. Congratulations Mark!



Mark Fox (L) received the Director's Award for Decision Support Services from MIC Bill

Co-op Awards

by Troy Marshall

*Two 45-year
length of service
awards earned
by NWS Fort
Worth
Cooperative
Observers were
presented
recently.*



From left, **Darrell Head** of Center City, TX was presented with the Dick Hagemeyer, 45 Year Length of Service Award, from MIC Bill Bunting, NWS Fort Worth. An informal luncheon was held at the Wagon Wheel restaurant in Goldthwaite in honor of Mr. Head. The photo was taken by HMT Troy Marshall.

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Co-op Awards Continued...



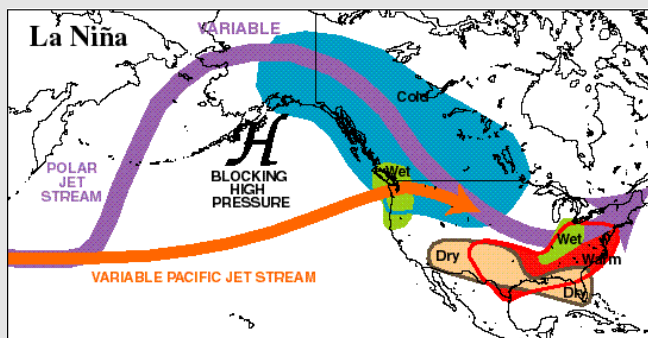
Elsie Lee Phillips right, of Cranfills Gap, TX accepts the Dick Hagemeyer, 45 Year Length of Service Award, from MIC Bill Bunting, NWS Fort Worth. An informal luncheon was held in Cranfills Gap, in honor of Ms. Phillips. Several members of her family also accompanied her to the luncheon. The photo was taken by HMT Troy Marshall.

*Thanks to all
of our Co-op
Observers for
all of your
hard work,
dedication,
and service!*

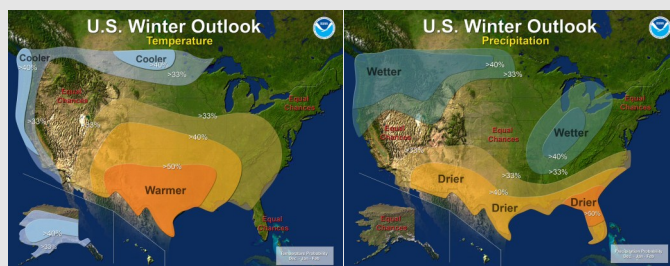
La Niña Points to Warm and Dry Winter by Daniel Huckaby

For North Texas, the winter of 2009-2010 was among the coldest and snowiest on record. El Niño does not guarantee heavy snow, but the strong El Niño event last winter was a major contributor to both the increased precipitation and the colder than normal temperatures. Despite its strength, the El Niño event came to an abrupt end. The equatorial Pacific is now 4 to 6 degrees Fahrenheit colder than it was 12 months ago, marking a rapid transition to La Niña.

This periodic flip-flopping of sea surface temperatures is known as the El Niño-Southern Oscillation (ENSO). The Pacific Ocean covers one third of the earth's surface, and the ocean's widest breadth is at the equator, where water temperatures determine the ENSO phase. This is an enormous surface area, where even slight temperature changes can significantly affect the heat content of the air above it, resulting in a cascading effect of altering wind and weather patterns, even in far-reaching parts of the globe (see picture below).



During La Niña, North Texas winters are typically warmer and drier than normal. The current La Niña is moderate to strong, which history has shown further reduces winter precipitation totals. Unfortunately for kids (and other snow lovers) this makes a repeat of last winter's



The general winter weather outlook for temperature (left) and precipitation (right) across the United States for this (2010-2011) winter.

snowfall very unlikely. Since continuous weather records were first kept in North Texas in the late 1800s, there has never been a winter without some wintry precipitation. However, many years have had little to no measurable snowfall, particularly during La Niña.

More likely than heavy snow is a continuation of precipitation deficits that have accumulated since September. As a result, drought conditions across the region are expected to persist in Central and South Texas, with a likely expansion of the drought further into North Texas. In addition, the most active fire seasons of the last decade were during La Niña conditions, and the winter of 2010-2011 is expected to follow suit.

For more information about the El Niño/Southern Oscillation, visit our ENSO webpage at

weather.gov/fortworth/?n=enso

For information about the ongoing drought, visit our drought information page at

weather.gov/fortworth/?n=drought



A Busy Fire Season Expected This Winter

by Joe Harris

North Texas has a history of increased wildfire activity during moderate to strong La Niña events, especially when significant drought is also present. This year, the 2010-2011 winter, is one of those years, and as such; an uptick in wildfire activity is to be expected during this winter season.

North Texas can expect warmer and drier conditions until springtime due to La Niña and increasing drought conditions. Severe to extreme drought conditions exist over areas generally southeast of a temple to Palestine line, and severe drought exists around the Comanche and Goldthwaite area.

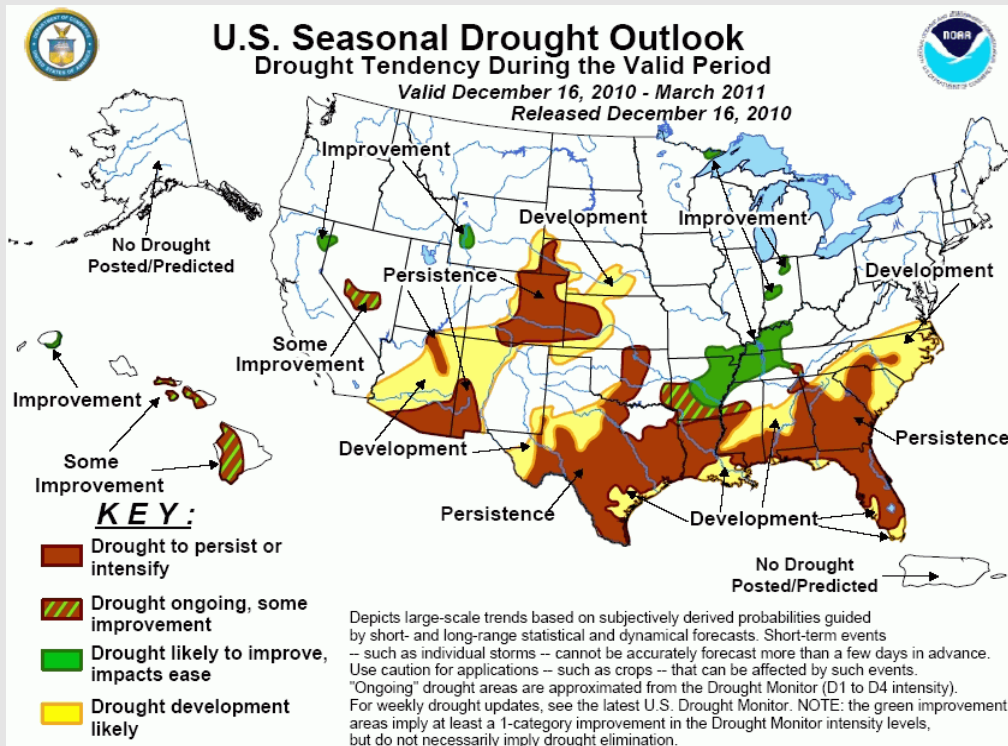
Whenever a strong cyclone develops in the southern or central Rockies and moves out east or northeast, very windy, dry and warm air usually moves east into North Texas before more humid and cooler air arrives behind a cold front. This leads to critical fire weather conditions and the likelihood of a red flag event. A red flag event for

North Texas is a two hours combination of very strong winds and very dry air when fuels can ignite easily. Strong winds are those of 20 mph or higher and very dry air is relative humidity readings of 30 percent or less.

During red flag events, many wildfire starts are from downed power lines. Others are from the actions of careless individuals, welding outside in strong winds, burning trash or debris piles, kids playing with matches, and even discarded cigarettes. Sparks from bad train brakes and flats on vehicles can also cause a fire to start.

If you observe a wildfire, report it to the nearest law enforcement office. Stay informed! Visit our fire weather information and forecast page at <http://www.srh.noaa.gov/fwd/?n=fireweather> for the latest fire weather conditions across North Texas. During a major wildfire outbreak, the North Texas weather forecast office may be asked to issue a fire warning. Fire warnings alert the public of the threat of a wildfire and request immediate evacuation.

"During a major wildfire outbreak, the North Texas weather forecast office may be asked to issue a fire warning; fire warnings alert the public of the threat of a wildfire and request immediate evacuation."



This is the general winter drought outlook for the United States. Notice that much of North Texas is expected to remain under drought conditions headed into the spring of 2011.

Interview with the MIC — 25 Years in Perspective

We sat down and talked with Bill Bunting, Meteorologist-in-Charge (MIC) of the NWS Weather Forecast Office in Fort Worth. Bill recently completed his 25th year as an NWS meteorologist and we wanted to get his perspective of how the NWS has evolved during that time and get his insights on the future of the NWS.

Bill, what has been the single biggest change you've seen in the NWS in the past 25 years?

There are many candidates for the answer to that question, but I would have to say that the Internet, and the capabilities it has enabled, has been the single greatest change I've seen during my career. Not only has the Internet radically improved our ability to convey forecasts and warnings and deliver a variety of weather data to our customers, but with smart phones we have the ability to access that vast amount of information virtually anywhere and anytime. When my interest in meteorology was just developing back when I was 12 or 13, I would wait for the weather segment during the evening news or watch the morning national news programs to get a visual picture of the weather. Now, any information you could possibly need is a few seconds away. I know you asked for the single biggest change, but if I could add one additional thought, the improvement in numerical weather prediction has dramatically improved over the course of my 25 years as a meteorologist. This achievement has resulted in forecasts that, when combined with forecaster expertise, have tremendous value for decision making and public safety.

You were in the NWS during the big modernization efforts in the 1990s. Do you think the time is right for another modernization?

The modernization in the 1990s certainly had unquestionable benefits due to the improved technologies and infusion of scientific advancements into the forecast and warning process. Over the years, there have been upgrades to the technology and with a dedicated Science and Operations Officer, a clear path to integrate new scientific understanding into our operations. I see the next 5 or 10 years focusing in two areas; the first is improving our capability to forecast high-impact weather conditions in a very location-specific manner with increasing lead time and a high degree of confidence; the second is in our ability to convey longer-range forecast information with explicit measures of confidence in various forecast outcome scenarios to support decision making. Continued improvements in numerical modeling will be critical in both areas, as will improving our understanding of how key partners (such as emergency managers) use weather information. This is the essence of decision support services that are important to our future.

What do you see as the biggest challenge facing the NWS as an agency in the next 25 years?

Weather information is exploding in quantity and complexity, and this trend shows no signs of slowing down. Much of this information is available to anyone with an Internet connection. I don't know if this is the biggest challenge we face or not, since the biggest are often the ones we don't see coming, but it will be critical for us to take this vast amount of information and turn it into actionable forecasts for a wide range of needs. This will involve working to increase



Bill Bunting, Meteorologist in charge (MIC) at the Fort Worth, TX Weather Forecast Office reflects on 25 years of service in the NWS.

forecast accuracy, developing more efficient ways for people to interact with forecasts to get the information they need, and increasing our understanding of the different ways people perceive weather threats and interpret forecast information. For a relatively young science, we've come a long way but much work remains to be done.

The Weather Forecast Office in Fort Worth was the first operational local office in the NWS to begin using Facebook. What role do you think social media, such as Facebook, Twitter, and others will play in the NWS in the next 5-10 years?

From my perspective, social media provides a new set of tools to do what we've always done, and that is to communicate; only now we can communicate faster and more concisely. We've always talked about the fact that a major challenge in a weather office is to minimize the gap between what we know and what we tell others. Social media gives us the tools to shrink that gap with a near-continuous flow of information both to and from the weather office. Before a major weather event, we can provide a "heads up"

“...we also need to position ourselves for the next generation of communication tools that inevitably will follow the ones we’re using today. “

Interview with the MIC continued...

message about a changing weather situation, follow that up with important safety information and our latest thinking on potential impacts, and then get real-time reports from people as a storm moves through. As impressive as this is, we also need to position ourselves for the next generation of communication tools that inevitably will follow the ones we’re using today.

Your career positions have ranged from meteorologist intern to Forecaster to Warning Coordination Meteorologist and now MIC. Which jobs were your favorites?

I can honestly say that I have benefited from every position I’ve held and every boss I’ve worked for, but being the Warning Coordination

Meteorologist in Kansas City, MO, and the MIC here in Fort Worth would probably be my favorites. Both jobs provide a mix of responsibilities including issuing warnings and forecasts, opportunities to meet and work with our partners and customers, and allow me to be involved in developing an office vision and philosophy. I have worked in areas of the country where all types of high-impact weather occur on a frequent basis and I really enjoy the challenge of preparing for and responding to those situations.

Welcome Matt Bishop!

In October, meteorologist Matt Bishop joined the staff of NWS Fort Worth. He has provided some background history in order for all of us in North Texas to get to know him a little better. Welcome, Matt!

Matthew Bishop

Born in Galveston, TX; grew up in the Texas Hill Country.

Graduated Texas A&M University with a B.S. in Meteorology December 1995

Career:

NWS WFO Lubbock, TX – Meteorologist Intern May 1995-August 1995

Base-ops International Houston, TX – Aviation Meteorologist January 1996 -October 1998

NWS WFO Birmingham Alabama – Meteorologist Intern October 1998-May 2001

NWS Houston, TX CWSU – Aviation Meteorologist May 2001-June 2010

NWS WFO Dickinson, TX – Meteorologist Forecaster July 2010-October 2010

NWS Fort Worth, TX – Meteorologist Forecaster October 2010-present

my brothers, cousins and I to work watering the crops, which was quite a chore during the hot dry months. It became routine to watch the local weather on a daily basis hoping for rain to get a break from the work. He and I would often spend evenings chatting side by side on the west-facing porch especially if storms were developing on the horizon. I will never forget those days and have been interested in weather forecasting ever since.”

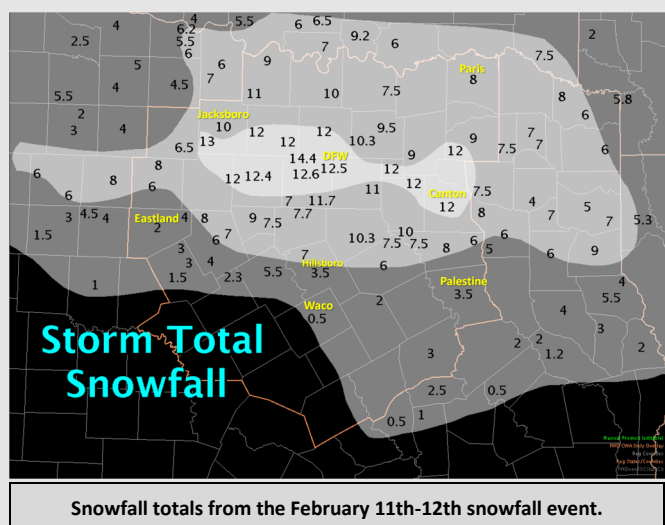


A look at the WFO Fort Worth Operations Area.

“I became interested in meteorology as a kid while spending summers on my grandfather’s farm in the Texas Hill Country. He would put

Significant Weather Events of 2010 continued...

Four climate records for snow were broken at DFW International Airport including the highest 24 hour snowfall total. A total of 12.5" of snow was recorded by the weather observer at the airport. Major tree damage occurred as a result of the historic snow storm. Thousands of trees and tree limbs fell on power lines which contributed to the nearly 500,000 customers who lost power during and after the storm. It took electric company crews in some areas several days after the storm to clear trees from power lines. The snow also caused road damage in several counties in the form of pot holes.



Near the end of February, another winter system produced up to 6" of snow south of Interstate 20. The Palestine area received the most snow during this event. About a month later, up to 8" of snow fell in Collin County during the night of March 20th. Most of the snow fell from southeastern Cooke County and southwestern Grayson County, through Collin County, and into Kaufman County. During the 2009-2010 winter season, most of the snow events occurred near and north of Interstate 20. The season snowfall total at DFW International Airport was 17.1"; just 0.5" short of the seasonal snowfall total record set in 1977-1978. Waco Regional Airport (the other official climate site in north Texas) recorded a season snowfall total of 3.7".

The spring severe weather season was relatively quiet in north Texas but 4 tornadoes occurred in the spring season. In contrast, 11 tornadoes occurred in the fall. On May 20th, one of the most documented tornadoes in North Texas in several years touched down in an open field near Midlothian. Due to good visibility on this day, residents as far away as eastern Johnson County and the Arlington Airport Tower saw this tornado. Hundreds of pictures of this EF0 tornado were submitted to local media outlets and the National Weather Service. Two other brief EF0 tornadoes occurred on this same day.

The most significant tornadoes of the year occurred in the fall. In early September, Tropical Storm Hermine moved from south Texas into Oklahoma over a two day period. Flooding occurred across much of North Texas from this system. The highest rainfall amounts and most significant flooding occurred along the Interstate 35 corridor where up to 12" of rain fell. Two persons died as a result of the flooding. On September 7th-8th, eight tornadoes were spawned from storms that developed as the remnants of Hermine were moving into Oklahoma. Two of the eight tornadoes were captured live by local media stations utilizing helicopters and tower cameras. The first tornado struck the city of Seagoville where it damaged four homes causing roof damage. The tornado track was over 9 miles long with maximum estimated winds of 90 mph. The tornado was rated an EF1. The other well documented tornado moved through the western portions of the city of Dallas causing EF2 damage at the intersection of Mockingbird Lane and Irving Blvd. The tornado damaged several warehouse buildings around the intersection. Thankfully only one person sustained minor injuries from this tornado and this was the only injury from all eight tornadoes on these two days.

The final tornado event of the year* occurred on October 24th. Many residents still freshly remember the tornado that hit the town of Rice due to the national coverage it received. This tornado was filmed live by a local emergency official, and the footage was widely distributed across local and national media markets. The Rice tornado was rated an EF2 and tracked about 6.5 miles with maximum estimated winds of 135 mph. Several homes were damaged by this tornado and at least two were destroyed. The tornado also damaged athletic fields in the town of Rice and damaged the newly opened intermediate school. As the tornado crossed Interstate 45, it overturned a few cars and trapped some people inside their vehicles. Four people sustained minor injuries from this tornado. On the same day, another EF0 tornado struck a subdivision southwest of Lone Oak in southern Hunt County. Ten homes were damaged in this tornado.

A total of 21 tornadoes occurred in North Texas this year* but this is well below the yearly average (since 1986) of 45. However, the last time we had more than one EF2 tornado during a calendar year was in 2006.

**This article was written on December 15, 2010 and the statistics and totals are current through this date and are subject to change through the remainder of 2010. Any snowfall events before the end of the year will be considered part of the 2010-2011 winter season.*

Dr. Weather: How Weather Effects Fire

by Ted Ryan

A fire needs three things to survive: oxygen, heat, and fuel. Remove any one of these elements and a fire dies. Weather conditions such as moisture, temperature, and wind play a major role in the birth, growth, and death of a wildfire because they impact each one of these elements.

Moisture, in the form of rain or humidity, can slow the spread of a fire and reduce its intensity. Potential fuels such as grass, sticks, trees, and underbrush can be hard to ignite if they have high levels of moisture, because the moisture absorbs the fire's heat. Long term precipitation amounts affect how much fuel there is available for a fire to burn. A drought will cause vegetation to die or dry out and it becomes fuel. When the humidity is low, meaning that there is a low amount of water vapor in the air, wildfires are more likely to start and grow quickly because fuels become dry and there is hardly any moisture left to provide resistance.

Warm temperatures and sunny skies increase the likelihood that a fire will ignite from an ignition source, such as a cigarette butt or sparks from a welding torch. Meanwhile, grass, sticks, trees, and underbrush on the ground receive radiant heat from the sun, which heats and dries potential fuels. Because the heat content within these fuels is already high ahead of a fire, it allows the wildfire to

spread very quickly. For this reason, wildfires are most likely to rage in the afternoon, when temperatures are at their hottest.

Wind probably has the biggest impact on a wildfire's behavior. Winds supply an active wildfire with additional oxygen, and by pushing the fire, allow it to reach new fuel in which to consume and burn.

On warm, windy, and dry days when vegetation has already dried out wildfires have the potential to be a serious threat to life and property. When these weather conditions become most likely to contribute to extreme wildfire behavior, the NWS will issue Red Flag Warnings so that everyone can be careful not to start fires and prepared to act quickly if a wildfire develops.

“On warm, windy, and dry days when vegetation has already dried out wildfires have the potential to be a serious threat to life and property. “



Photo provided by IMET Joel Rothfuss

Hard Freeze Warning - Beginning this Winter

by Greg Patrick

Beginning this winter season, NWS Fort Worth will begin issuing *Hard Freeze Warnings* any time we are forecasting temperatures to fall to 10F or colder. The *Hard Freeze Warning* will be issued as a Non-Precipitation Weather hazard and will be distributed via our web page, NOAA Weather Radio, and all other regular dissemination methods.

The Weather Forecast Office decided to adopt this local policy after last winter's extremely cold weather. We noticed that the

reports of bursting pipes and other extreme cold impacts became rather widespread as low temperatures approached 10F. Our office wants to be able to highlight these occurrences with the *Hard Freeze Warning*.

There will not be any changes to Freeze Warnings, which are typically issued for the first freeze in the fall and for any occurrences of freezing temperatures in the growing season.

**National Weather
Service - Fort Worth, TX**

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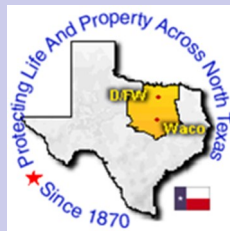
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**"Protecting Life and
Property Across North
Texas."**



Thank you to all of the contributors to the Winter 2011 edition of The Texas Thunderbolt. Look for the Summer 2011 edition of The Texas Thunderbolt to become available in the late spring of 2011.

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Visit us on the web!
weather.gov/fortworth

***The 2011 Spotter Training Season is
Right Around the Corner!***

We will begin offering SKYWARN spotter training classes in early January 2011 across all of North Texas. Want to know when a spotter training class will be offered in your area? Visit our spotter training schedule online at:

<http://www.srh.noaa.gov/fwd/?n=skywarnmap>

Remember spotter training classes are FREE to the public. No fees or registration are necessary to attend, simply show up at the time and location listed on the schedule above. Spotter training classes offer training for anyone interested in identifying cloud features associated with severe weather in North Texas. Classes focus on identifying key cloud features, spotter safety and spotter reporting procedures. Classes are typically about 2 hours long with a 10 minute intermission in the middle of the class. Advanced spotter training is also offered at several locations across North Texas.



Ask Dr. Weather!

If you are interested in the weather and have always wanted to have something weather-related explained, submit us your question! For the next issue of the Texas Thunderbolt, Dr. Weather will answer one of your submitted questions in a full length article. To submit your question, please send an email to sr-fwd.webmaster@noaa.gov.

The most recent Dr. Weather topics include: Snow Development, Frost, Microbursts, Landspouts, and Hurricanes & Wind Shear. Send us your question, and whether you'd like your name and location included in the article, and your question may be featured in the next installment of Dr. Weather's Wisdom!

Previous issues of the Texas Thunderbolt can always be found at

<http://www.srh.noaa.gov/fwd/?n=skywarn>